

## Use of Snow Chains

The use of tire snow chains and the criteria for when to apply them varies widely throughout the county. Improperly applied snow chains have caused significant damage to the apparatus and delayed the response of units. This memorandum is intended to provide guidance on the use of snow chains during various types of inclement weather.

In general there are two types of chains in use in the county:

1. **Permanently installed “On-Spot” chains.**
2. **Standard removable tire chains.**

Permanently mounted **“On-Spot” chains** or “automatic chains”, consist of short lengths of snow chain attached to a small drive wheel that, when activated, contacts the inside tire of the rear duals. These devices rely on centrifugal force to throw the lengths of chain under the tire. Depending on need, these chains can be raised or lowered from the cab of the apparatus. For best operation these chains **should be engaged while the unit is moving**. These chains work well when the apparatus can maintain slow but steady speeds, such as in shallow snow or on intermittently clear or covered roadways. These chains will not work well in deep snow or when conditions bring the apparatus to a crawl. **DO NOT drive faster than 30 mph when you are using “On-Spot” chains! RAISE the chains anytime that they are not absolutely necessary.** Driving at higher speeds for prolonged periods **will** damage or destroy the “On-Spot” assembly and **will cause tire damage that may lead to failure.**

Removable **standard tire chains**, also known as “drop chains”, are applied manually to the outside tire of the rear duals. They must be applied so that they are well distributed around the tire and fit snugly. A video on proper installation of these chains is available. Standard tire chains offer better performance than “On-Spots” in deep snow, heavily rutted snow, and on ice. This is because they do not rely on centrifugal force to place them under the tire. Standard tire chains can be used at the same time as “On-Spots” because they affect different tires. Using both types at the same time increases the likelihood that a chain will be under the tread at any given time, and therefore increases traction. Unfortunately, standard tire chains can be very damaging if they come loose. Units utilizing standard tire chains should carry lengths of coat hanger wire or mechanic’s wire (available in the shop) to secure broken sections in the event of a failure. **Plastic cable ties will not work.** In some cases, if the broken section cannot be secured, the entire chain may have to be removed before a unit can continue. The video will provide more information about broken chains and chain repair.

The following guidelines should be followed for chain usage:

**Less than 6 inches of snow on the ground or predicted:** Use the apparatus mounted “On-Spot” chains. Be sure to raise the chains on cleared pavement or when they are not needed for traction. Monitor the weather for changes that might produce more than 6 inches of snow and be ready to apply standard tire chains if conditions worsen.

**6 inches of snow on the ground with more falling or forecasted:** Apply the standard tire chains, and **RAISE** the “On-Spots”. **DO NOT drive faster than 30 mph on clear pavement for any reason.** If a chain breaks, then **STOP** the unit as quickly as possible in a **SAFE** place. Notify ECC that you are out of service until you can repair or drop the chain. Carry a snow shovel to aid in clearing snow from under the unit if a repair is necessary and to clear walkways if needed at the scene of an incident.

**Blizzard Conditions:** Apply and use the standard tire chains. **Do not use the “On-Spot” chains unless you are stuck and have a tire that is spinning.** Raise the “On-Spots” as soon as you regain traction. Observe the rules stated above concerning speed and chain breakage. Carry scoop and spoon shovels on the unit if possible. These shovels will allow for quicker digging through plow banks and packed drifts that would bend or break normal snow shovels.

**Ice:** Apply the standard tire chains and **use them in conjunction with the “On-Spots”.** Recognize that ice is by far the most dangerous road surface we have to deal with. Allow several times your normal stopping distance and reduce speeds dramatically prior to entering turns. Carry sand, absorbent, or ice melt to improve traction in small work areas and to aid you if you get stuck. **Pay close attention to other vehicles moving in your proximity.**

**All personnel must monitor the condition of the roadways in their response area for changes throughout their shift, and report these changes to the on-duty station officer.** This monitoring must include getting up periodically at night. All personnel should realize that changes in road conditions may force them to apply and remove chains more than once in their shift. **Authority for applying chains will rest with the on-duty station officer** unless orders are received from a higher authority. When the station officer makes the determination that chains are needed he or she will notify the on-duty Battalion Chief and the LFRD representative. Personnel driving the apparatus should remember that vehicle speed can be determined with AVR technology.

As a general rule **units running with standard tire chains should not be on the Interstate Highways** because they cannot exceed 30 mph. Driving at 30 mph on the Interstates produces one hazard, while driving at higher speeds with the chains on produces another. This rule will impact the patient transport practices of the north county stations. For this reason, the on-duty station officers and battalion chiefs should consider using one type of chained vehicle to access patients and remove them to cleared roads where they can be transferred to an unchained unit for transport. Notify ECC of your intended strategy.



## **DESCRIPTION OF OPERATION**

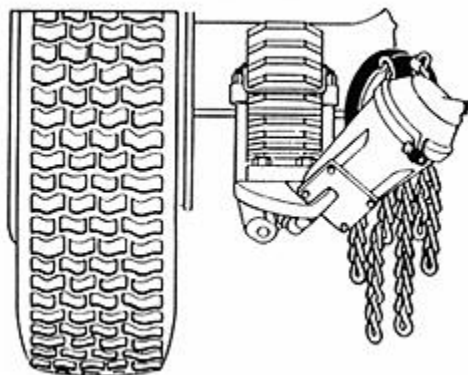
The Onspot Automatic Tire chain offers the traction of a single set of conventional snow chains at the flip of a switch, without having to stop the vehicle.

An electric switch mounted in the cab provides 12 volts to an air solenoid mounted on the vehicle's frame rail. Compressed air to the solenoid is supplied from either the vehicle's onboard air system or a 12-volt compressed air kit.

When the dashboard switch is activated, the solenoid opens allowing compressed air to enter the air chamber and lower the chainwheel so it contacts the inside of the tire. The friction between the tire and the rubber-covered chainwheel causes the chainwheel to rotate, creating enough centrifugal force to flail the chains out in front of the tire. (The principle of the system is similar to a small generator driven by a bicycle tire to operate a headlight.)

Six lengths of chain spaced at 60-degree intervals on the chainwheel ensure that there are always two (2) chains between the tire and road surface whether you are accelerating, braking or are in a wheel lockup condition. The traction from the chainwheel is obtained in forward OR reverse.

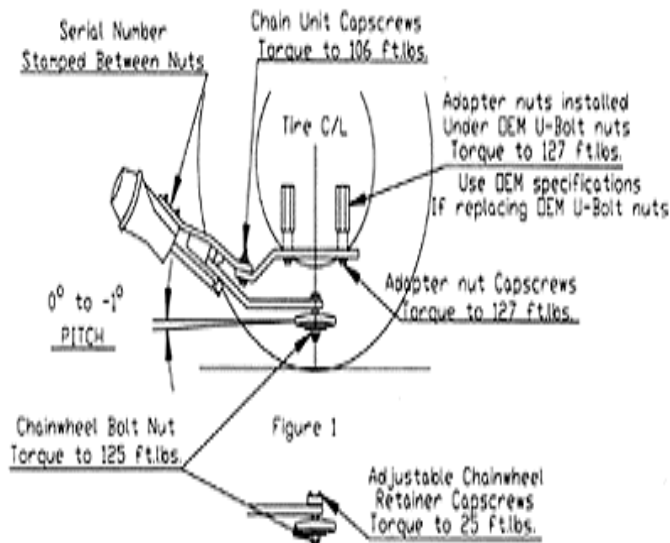
When the dashboard switch is turned off, the solenoid exhausts the air provided to the chain units and return springs in the air chambers bring the chainwheels back to their resting position.



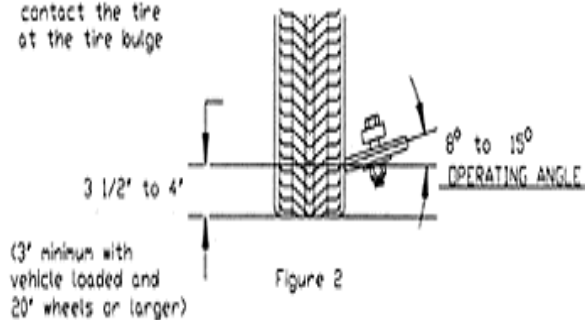


## Keep your Onspots in tune

### General Guidelines



Chainwheel should contact the tire at the tire bulge



2 3/4" contact on loaded vehicle with 16" wheels and 170mm chainwheel

Red Chainwheel Driver Side  
Blue Chainwheel Passenger Side

Grease Arm Bearings

Check Play In:

Ball Joint  
Chainwheel Bearings  
Arm Bearings

Check Tire Sidewall Pressure  
(minimum 20 Lbs)

Check Chainwheel Contact  
Operating Angle  
Pitch  
Contact Height

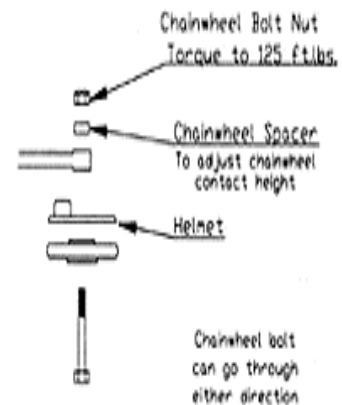


Figure 4

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